

Title (en)

SEAMLESS STEEL TUBE FOR LINE PIPE USED IN ACIDIC ENVIRONMENT

Title (de)

NAHTLOSES STAHLROHR FÜR EIN LEITUNGSROHR IN SAURER UMGBUNG

Title (fr)

TUBE D'ACIER SANS SOUDURE POUR UN TUBE DE CANALISATION UTILISÉ DANS UN ENVIRONNEMENT ACIDE

Publication

EP 3018229 A4 20170329 (EN)

Application

EP 14819614 A 20140623

Priority

- JP 2013140404 A 20130704
- JP 2014003345 W 20140623

Abstract (en)

[origin: EP3018229A1] A seamless steel pipe that is used for a line pipe used in sour environments, has a yield strength of 400 MPa or less and exhibits excellent HIC resistance is provided. The seamless steel pipe according to an embodiment of the present invention is used for a line pipe used in sour environments. The seamless steel pipe includes: a chemical composition consisting, in mass%, of, C: 0.01 to 0.20%, Si: 0.05 to 0.50%, Mn: 0.3 to 2.0%, P: 0.02% or less, S: 0.01% or less, Cr: 0.02 to 0.2%, sol.Al: 0.001 to 0.100%, O: 0.0050% or less, N: 0.0100% or less, Ca: 0 to 0.0050%, Ti: 0 to 0.012%, and Nb: 0 to 0.012%, the balance being Fe and impurities; and a structure consisting, in area ratio, of 10 to 50% of ferrite and 0 to less than 5% of pearlite, the balance being tempered bainite and/or tempered martensite, and the number of inclusions each having a grain diameter of 50 µm or more is not more than 15 per 100 mm², and the seamless steel pipe has a yield strength of 400 MPa or less.

IPC 8 full level

C22C 38/00 (2006.01); **C21D 9/08** (2006.01); **C22C 38/38** (2006.01)

CPC (source: EP US)

C21D 8/105 (2013.01 - EP US); **C21D 9/08** (2013.01 - EP US); **C22C 38/00** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US);
C22C 38/002 (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US);
C22C 38/26 (2013.01 - EP US); **C22C 38/28** (2013.01 - EP US); **C22C 38/38** (2013.01 - EP US); **F16L 9/02** (2013.01 - US);
C21D 2211/002 (2013.01 - EP US); **C21D 2211/004** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP US);
C21D 2211/009 (2013.01 - EP US)

Citation (search report)

- [A] EP 2415884 A1 20120208 - SUMITOMO METAL IND [JP]
- [A] WO 2010095755 A1 20100826 - NIPPON STEEL CORP [JP], et al
- [A] EP 1918395 A1 20080507 - SUMITOMO METAL IND [JP]
- [X] WO 2011099408 A1 20110818 - NIPPON STEEL CORP [JP], et al
- [A] LING ZHONGQIU ET AL: "Influence of Quenching On-line on Properties of X70 Steel for Sour Service Seamless Pipe", ENERGY PROCEDIA, vol. 16, 1 January 2012 (2012-01-01) - 1 January 2012 (2012-01-01), pages 444 - 450, XP028470876, ISSN: 1876-6102, [retrieved on 20120315], DOI: 10.1016/J.ENERGY.2012.01.072
- [A] NIU J ET AL: "Tempering microstructure and mechanical properties of pipeline steel X80", TRANSACTIONS OF NONFERROUS METALS SOCIETY OF CHINA, ELSEVIER, AMSTERDAM, NL, vol. 19, 1 December 2009 (2009-12-01), pages s573 - s578, XP027086849, ISSN: 1003-6326, [retrieved on 20091201]
- See references of WO 2015001759A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 3018229 A1 20160511; EP 3018229 A4 20170329; EP 3018229 B1 20180905; AR 096726 A1 20160127; BR 112015031596 A2 20170725;
BR 112015031596 B1 20200303; CN 105358725 A 20160224; CN 105358725 B 20190215; JP 6028863 B2 20161124;
JP WO2015001759 A1 20170223; MX 2015017740 A 20160621; SA 515370317 B1 20160601; US 10094008 B2 20181009;
US 2016369381 A1 20161222; WO 2015001759 A1 20150108

DOCDB simple family (application)

EP 14819614 A 20140623; AR P140102396 A 20140625; BR 112015031596 A 20140623; CN 201480038139 A 20140623;
JP 2014003345 W 20140623; JP 2015525040 A 20140623; MX 2015017740 A 20140623; SA 515370317 A 20151224;
US 201414901746 A 20140623